

Bird Fleas, Genus *Ceratophyllus*, from Alaska (Siphonaptera: Ceratophyllidae)

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Abstract.—Birds' nests and other sources excluding bodies of birds provided 24 collecting and rearing records of 7 of the 14 species of bird fleas in the genus *Ceratophyllus* Curtis found in Alaska: *Ceratophyllus styx riparius* Jordan and Rothschild, *Ceratophyllus idius* Jordan and Rothschild, *Ceratophyllus scopulorum* Holland, *Ceratophyllus garei* Rothschild, *Ceratophyllus diffinis* Jordan, *Ceratophyllus gallinae* (Schrank), and *Ceratophyllus niger* C. Fox.

Ceratophyllus Curtis is the largest of four genera of bird fleas in Alaska, with 14 species parasitic on birds. Twenty-four new collecting and rearing records of seven of these species are presented, with notes on hosts, host nests, habitat, and behavior.

MATERIALS AND METHODS

Fleas were collected by picking apart old birds' nests in a white pan, by hand-picking from infested persons, plants, and the ground, and by swabbing vegetation with a piece of white flannel cloth. Specimens of two species were reared by holding nests in plastic bags for several weeks to allow immature fleas to develop into adults. Rearings and uncredited collections were by Haas. Specimens were preserved in 70 percent ethanol, and samples were cleared in 10 percent KOH and oil of cloves and permanently mounted in Canada balsam. Specimens were deposited in the collections of Haas and Wilson, and in the Canadian National Collection, Ottawa.

RESULTS AND DISCUSSION

Ceratophyllus styx riparius Jordan and Rothschild

Record.—1 male, King Salmon, 28.VI.1978, burrow of *Spermophilus parryii* (Richardson) (Arctic Ground Squirrel).

This flea is normally abundant in nests and burrows of the Bank Swallow (*Riparia riparia* (Linnaeus)) (Haas et al., 1980b; Hopla, 1965). The ground squirrel burrow, apparently incomplete and inactive, was at the base of a cut in a sand dune along the main road. The stray flea was found about 30 cm inside of the entrance. The nearest known nest colony of Bank Swallows was 9.3 km to the southeast.

***Ceratophyllus idius* Jordan and Rothschild**

Records.—9 males (1 dead), 20 females, Anchorage, 1.V.1983, nest of *Tachycineta thalassina* (Swainson) (Violet-green Swallow) in nest box, T. Rumpfelt. Two males, 5 females (4 dead), Palmer, 4.5 km NE (Clark-Wolverine Road), 13.IX.1975, nest of *Picoides* sp. (woodpecker) in cavity in *Populus* sp.

In Alaska this common flea of nests of Tree Swallows (*Tachycineta bicolor* (Vieillot)) also breeds in nests of Violet-green Swallows (Haas et al., 1981; Hopla, 1965).

***Ceratophyllus scopulorum* Holland**

Record.—2 males, 4 females, Grayling, 29.VIII.1979, nest of *Hirundo pyr-rhonota* Vieillot (Cliff Swallow) on house, F. A. Norman Jr. and G. G. Howard.

In Alaska this is the flea most commonly collected from nests of Cliff Swallows (Haas and Wilson, 1979; Hopla, 1965).

***Ceratophyllus garei* Rothschild**

Records.—1 female (dead), Portage, 5.5 km SE, 10.VI.1978, nest, probably of *Ixoreus naevius* (Gmelin) (Varied Thrush), and 176 males, 195 females, reared from same nest, 21.VI–16.VII.1978. Two males, Scammon Bay, 13.VI.1980, *Microtus oeconomus* (Pallas) (Tundra Vole), G. E. Haas and S. Goodman. Two males, 2 females, Seward, 12.8 km NW (km 12 Resurrection Road), 4.IX.1978, nest of *Zonotrichia leucophrys* (Forster) (White-crowned Sparrow), and 4 males, 5 females, reared from same nest, 19.IX.1978.

This Holarctic bird flea ranges widely in Alaska and is without distinct host specificity (Holland, 1963; Hopla, 1965). It is strongly hygrophilic, breeding in birds' nests on or close to damp ground. Hopla (1965) recorded specimens from mammals, and we also collected strays, but most of our specimens were reared from two birds' nests.

The nest of the Varied Thrush was 2.2 m above ground level in a spruce (*Picea* sp.). It was in dense shade in a zone of abundant precipitation and high humidity. The nest of the White-crowned Sparrow was 1.2 m up in a willow (*Salix* sp.) standing in several cm of water on a river flood plain.

***Ceratophyllus diffinis* Jordan**

Record.—1 female, Wasilla, 6 km E, 10.V.1975, vegetation near fallen birch (*Betula papyrifera* Marsh.) stub with old nest of *Parus atricapillus* Linnaeus (Black-capped Chickadee) or *Parus hudsonicus* Forster (Boreal Chickadee).

A Nearctic species associated with a variety of birds (Haas et al., 1980a; Holland, 1963).

***Ceratophyllus gallinae* (Schrank)**

Records.—First 8 collections from nests of woodpeckers (*Picoides* spp.) in cavities in dead birch (*Betula papyrifera*) and poplar (*Populus* sp.) stubs. Six males (1 dead), 24 females, Chickaloon (km 124.8 Glenn Highway), 8.IV.1976. One male, 1 female (both dead), Kenai (city), 23.IV.1976. One male, 1 female, Palmer, 3.2 km S, 20.IV.1975, R. E. Barrett; 3 females, 4.5 km NE (Clark-Wolverine Road), 13.IX.1975; 5 males, 14 km NW (Edgerton Park Road), 27.IX.1975. One female, Sterling, 7.2 km NW (Sunken Island Lake Road), 30.VII.1976, and 2

females, reared from same nest, 25.VIII.1976. One female, Talkeetna, 2.9 km SE, 21.IV.1975. One female, Wasilla, 4.6 km E, 2.V.1975; 24 males, 8 females, 6 km E, 8.V.1975, *Homo sapiens* L., grass, and *Betula papyrifera* stub with old nest of *Parus atricapillus* or *Parus hudsonicus*, and 12 males, 1 female, 10.V.1975, same grass and stub.

First reported for Alaska by Holland (1960), this common bird flea has been established for some time in eastern North America and named the European chicken flea for its status as a pest species. In the Old World it is widely distributed as a natural parasite of passerines (Holland, 1963). We collected one specimen from a Yellow-rumped Warbler (*Dendroica coronata* (Linnaeus)) (Haas et al., 1980a), a few strays from nests of swallows and squirrels (Haas et al., 1981; Haas and Wilson, 1982) and woodpeckers, and many specimens that were seeking hosts.

During a warm, sunny period in spring, an old nest of a chickadee was observed 2 m up in a dead, well-rotted birch stub located in a dry, grassy opening of a spruce-hardwood forest. After pushing the stub over for a closer examination of the nest, the collector suddenly was aware of jumping fleas swarming over him (but not biting), the grass, and the stub. Two days later more specimens were swabbed from the grass and the stub.

After reviewing descriptions of host-seeking behavior of *Ceratophyllus gallinae* in Europe by Bates (1962), Humphries (1968), Jurík (1974), Rothschild and Clay (1957), and others, we concluded that when the stub was first observed, the fleas had already emerged from cocoons, emigrated from the nest and dispersed up the stub. And further that most females, having emerged before the males, had already acquired hosts that carried them away, but some fleas that jumped toward birds missed them and landed on the grass. When the stub was pushed over, any fleas still on it were scattered over the grass.

Ceratophyllus niger C. Fox

Records.—26 males, 42 females, Chisik Island, Cook Inlet, VI.1979, *Homo sapiens* L. at rookery of *Rissa tridactyla* (Linnaeus) (Black-legged Kittiwake), R. D. Jones, Jr., C. Slater, and J. Burke; 15 males, 32 females, same data but VII.1979.

The western chicken flea is common in many parts of western North America, but in Alaska records are limited. The first collections were in 1937 from nests and bodies of *Larus argentatus* Pontoppidan (Herring Gull) and *Phalacrocorax auritus* (Lesson) (Double-crested Cormorant) (Philip, 1938). After a lapse of over 40 years, more specimens were collected in southcentral Alaska (Haas et al., 1979). One of the latter collectors (Jones) revisited the flea-infested kittiwake rookery on Chisik Island in 1979 and was attacked again by *Ceratophyllus niger* specimens coming from the nests. His two assistants were also attacked, and all three hand-picked 115 specimens from their bodies and clothing.

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